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Hall

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(54) **COLLISION AVOIDANCE SYSTEM**

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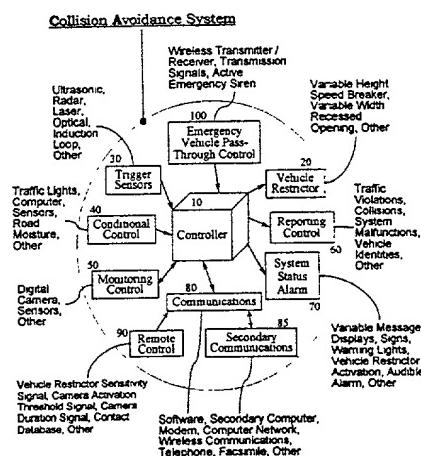
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(57) **ABSTRACT**

The Collision Avoidance System prevents collisions between vehicles and vehicular collisions with pedestrians, trains, and stationary objects by monitoring, controlling, documenting, and reporting the speed and position of vehicles. The system guards against speeding violations, moving violations, and particular safety hazards by invoking a reduction of vehicle speed or by restricting vehicle movement to control its position. This is primarily accomplished with the activation of a controllable road perturbation. The system also monitors pedestrians, school bus loading/unloading, traffic density, trains, environmental conditions that may affect driving, and traffic control systems to determine the action to take for collision prevention. The capability to monitor various parameters that may indicate an impending collision or detect parameters that indicate that conditions are more favorable for a collision allows the system to monitor an entire traffic environment to anticipate and thus prevent those collisions. The system integrates and synchronizes with existing traffic control devices and systems to ensure that it reinforces the traffic laws and safety intent of the environment in which it is installed. Sensors detect the status of objects within the traffic environment including the location and speed of vehicles. A computer is used to determine if the vehicles are adhering to the traffic laws or other safety concerns. Alarms may accompany the system output to inform the operator what must be done to prevent a collision. Additional sensors and cameras document the identity of violating vehicles as well as any resulting collisions and report the information to predetermined authorities through a multiple-channel communications interface. Authorities can remotely alter system operations to compensate for changes in traffic or weather conditions that demands a change in driving behavior in order to maintain safe travel. The system also allows emergency vehicles to pass unimpeded through the traffic environment.

21 Claims, 12 Drawing Sheets



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